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मानक

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IS 6868 (1991): Dental instruments - Dental extraction forceps [MHD 8: Dentistry]



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भारतीय मानक

दंत उपकरण — दांत निकालने की चिमटी — विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

DENTAL INSTRUMENTS — DENTAL
EXTRACTION FORCEPS — SPECIFICATION

(*First Revision*)

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BUREAU OF INDIAN STANDARDS
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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dental Instruments and Equipment Sectional Committee had been approved by the Medical Equipment and Hospital Planning Division Council.

This standard was first issued in 1972. Its first revision has been brought out to incorporate certain modifications based on the experience gained during implementation of this standard and to align it with the latest practices being followed at the national as well as international level.

This standard covers general requirements, common design features and test methods for dental extraction forceps. Thus it is expected to serve as a horizontal standard for all types of dental extraction forceps and would form a necessary adjunct for their respective standards. Consequently it is intended to revise all the existing standards on different types of dental extraction forceps, so as to cover only dimensional and other specific requirements, which cannot be generalized. This would help in speedier implementation of Indian Standards on dental extraction forceps.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DENTAL INSTRUMENTS — DENTAL EXTRACTION FORCEPS — SPECIFICATION

(*First Revision*)

1 SCOPE

1.1 This standard specifies requirements and a recommended sampling plan for dental extraction forceps.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
1501 (Part 1) : 1984	Method of vickers hardness test for metallic materials: Part 1 HV 5 to HV 100 (<i>second revision</i>)
3403 : 1981	Dimensions for knurls (<i>first revision</i>)
3642 (Part 1) : 1990	Surgical instruments — Specification: Part 1 Non-cutting, articulated instruments (<i>second revision</i>)
4905 : 1968	Methods for random sampling
6603 : 1972	Stainless steel bars and flats
7531 : 1990	Methods for testing of corrosion resistance of stainless steel surgical instruments (<i>first revision</i>)

3 MATERIALS

3.1 Forceps

The body of the forceps shall be made of stainless steel conforming to designation 20 Cr 13 or 30 Cr 13 of IS 6603 : 1972.

3.2 Pin or Screw

The screws used in forceps shall be made of stainless steel conforming to designation 20 Cr 13 of IS 6603 : 1972.

4 TYPES, SHAPES, SIZES, DIMENSIONS AND MASS

4.1 The types, shapes, sizes, dimensions and mass of the forceps shall conform to the relevant Indian Standards for dental extraction forceps. In the absence of a standard, these shall be as per user's requirements, which shall clearly specify dimensions on the same lines as given in

existing Indian Standards on dental extraction forceps.

4.2 Tolerances

Tolerances on dimensions shall be as given in 4.2 of IS 3642 (Part 1) : 1990.

4.3 The two halves of the instrument shall, however, not differ at any dimension and shall match with each other perfectly.

4.4 Mass

The mass of the dental extraction forceps shall be as indicated in the relevant Indian Standard for dental extraction forceps. A tolerance of ± 5 g shall, however, be permitted.

5 HARDNESS

5.1 The forceps shall be uniformly hardened and tempered to a hardness of 370 to 410 HV and the pin or the screw to 310 to 330 HV.

5.2 Matting surfaces on the same instrument such as opposite jaws and shanks shall not vary in hardness by more than 40 HV.

6 WORKMANSHIP

6.1 Joint

6.1.1 The forceps shall be made with recessed screw joint, conforming to IS 3642 (Part 1) : 1990. The screw used shall be of slotted cheese head pattern having screw threads as given in individual Indian Standards for dental extraction forceps. When fitted, the screw shall be ground flush with the forceps.

6.1.2 The joints of the forceps shall be so constructed that the handles open smoothly without jerk and without application of undue force.

6.1.3 There shall be no perceptible lateral movement of the handles in fully open, intermediate or fully closed positions.

6.1.4 The inner or bearing surface of the joint shall be smoothly finished and free from obvious imperfections, when examined visually without magnification.

6.2 Handle

6.2.1 The handles of the forceps shall be suitably shaped, inner faces flat and polished.

6.2.2 The outer faces of the handles of the forceps shall be knurled up to length shown in

the figures in individual Indian Standards for dental extraction forceps. The knurling shall be of diamond pattern with a pitch of 1.0 mm and shall conform to IS 3403 : 1981.

6.3 Beak

If the beaks are serrated, the serrations shall be reasonably uniform in depth throughout the length and consistent in distribution in any one pattern of forceps. The serrations shall be clear and clean.

6.4 The instrument shall be balanced, the movement shall be even and the jaws shall register accurately.

7 SURFACE CONDITIONS

7.1 All surfaces shall be free from pores, crevices, grinding marks and other imperfections. The instrument shall also be free from residual scale, acid, grease, grinding and polishing materials. Compliance with these requirements shall be checked by visual inspection. There shall be no non-functional sharp edges which could cause injury during normal use.

7.2 Surface Finish

The surface finish of the instrument shall be reflection reducing, for example, satin finish, matt black finish.

7.3 Passivation and Final Treatment

The forceps shall be treated by a suitable passivation process, for example, by electropolishing or by treatment with 10 percent (v/v) nitric acid solution for not less than 30 minutes at a temperature not less than 10°C and not exceeding 60°C. The instrument shall then be rinsed in water and dried in hot air.

NOTE — If the joint is lubricated, the lubricant should be non-corrosive and suitable for medical application according to Indian Pharmacopoeia.

8 TESTS

8.1 Hardness

Forceps shall be tested for hardness as specified

in 5.1 and 5.2 in accordance with IS 1501 (Part 1) : 1984.

8.2 Performance

The forceps shall show no sign of damage when tested in accordance with Annex A. The load applied shall be as given in the individual Indian Standard for dental extraction forceps.

8.3 Corrosion Resistance

The forceps shall be subjected to all the tests for corrosion resistance as given in IS 7531 : 1990. They shall pass the tests.

9 MARKING

9.1 Marking on Instruments

The forceps shall be legibly and indelibly marked with the indication of the source of manufacture, the letters 'ss' or the words 'stainless steel' and the country of manufacture.

9.2 Marking on Cartons

The carton or the package containing the forceps shall bear all the markings given on the instrument. In addition, the carton or package shall also be marked with the name of the individual extraction forceps and any other information that may be required by the purchaser or law in force.

10 PACKING

10.1 The forceps shall either be put individually in a polyethylene bag or wrapped in wax paper. Each forceps then shall be packed in carton either as agreed to between the purchaser and the manufacturer or in accordance with the current trade practices.

11 SAMPLING

11.1 The scale of sampling and criteria for conformity of the instruments to the requirements of this specification shall be as agreed to between the purchaser and the supplier. A recommended sampling plan is given in Annex B.

ANNEX A (Clause 8.2)

PERFORMANCE TEST

A-1 APPARATUS

A-1.1 Testing Apparatus

A suitable apparatus, such as that shown in Fig. 1, capable of applying a load in the manner indicated.

A-2.2 Beak Prop

A prop made from annealed brass of shape and width such that it can be used to obtain a 35 to 45 mm opening of the forceps handles, measured at their extremity.

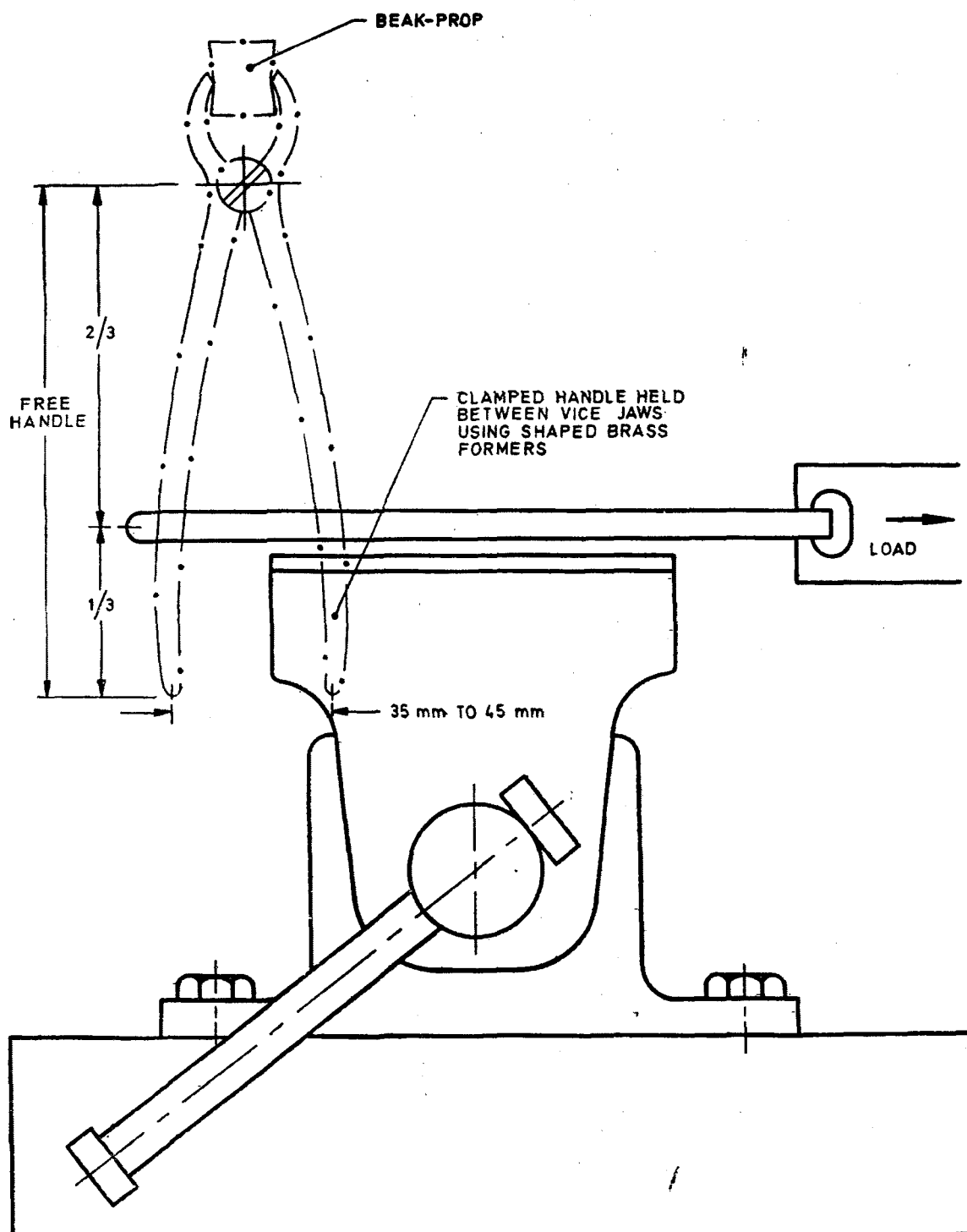


FIG. 1 PERFORMANCE TEST

A-2 PROCEDURE

A-2.1 Mount the forceps in the testing apparatus, using the beak prop to obtain a handle opening of 35 to 45 mm (see Fig. 1). Place the beak prop between the extremities of the forceps beaks and check the handle opening by measuring at a similar position on the handle, as indicated in Fig. 1.

A-2.1.1 Apply a load as indicated in the individual specifications for dental extraction forceps for 3 minutes to a point at approximately $\frac{2}{3}$ of the distance from the joint to the free end of the handle (see Fig. 1). Ensure that the handles do not return to their fully closed position during application of the load. After 3 minutes, if no fracture has occurred, examine forceps for any sign of permanent set at the beak, joint or handles.

ANNEX B

(Clause 11.1)

SAMPLING OF DENTAL EXTRACTION FORCEPS

B-1 LOT

In any consignment, all the forceps of the same type and pattern, produced from the same material under similar conditions and having same surface finish shall constitute a lot.

B-1.1 For ascertaining the conformity of the material to the requirements of the relevant specifications, samples shall be tested from each lot separately.

B-1.2 The number of forceps to be selected for each lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

Table 1 Scale of Sampling
(-Clauses B-1.2 and B-2.2)

Lot Size (1)	Sample Size (2)	Sub-sample Size (3)
Up to 15	2	1
16 to 50	3	1
51 to 150	5	2
151 and above	8	3

B-1.3 These forceps shall be selected from the lot at random and in order to ensure randomness of selection, procedures given in IS 4905 : 1968 may be followed.

B-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

B-2.1 All the forceps selected as in B-1.2, shall be inspected for shape^d and dimensions, mass, workmanship and surface conditions (visual). Forceps failing to meet one or more of these requirements shall be considered defective. A lot shall be considered as having satisfied these requirements, if there is no defective in the sample.

B-2.2 The lot having satisfied the requirements tested under B-2.1, shall be further tested for hardness, corrosion resistance and performance tests as per the relevant specifications. For this purpose, a sub-sample of size given in col 3 of Table 1 shall be selected. Each of the forceps in the sub-sample shall be subjected to these tests. The lot shall be considered as having satisfied the relevant requirements of the specification if there is no failure.

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